

WHAT IS CLAIMED IS:

1. A display apparatus for selectively displaying a two-dimensional image and a three-dimensional image, the display apparatus comprising:

a flat panel display device which generates a two-dimensional image when two-dimensional image display is requested and generates a plurality of viewpoint images having parallax when three-dimensional image display is requested; and

a switching panel which is disposed in front of the flat panel display device to be separated from the flat panel display device by a predetermined distance and is controlled according to a type of image generated by the flat panel display device so that the two-dimensional image and the three-dimensional image can be displayed.

2. The display apparatus of claim 1, wherein the switching panel is formed to transmit light as it is when the two-dimensional image is generated by the flat panel display device and has a structure corresponding to pixel information of the flat panel display device when a plurality of viewpoint images for forming the three-dimensional image are generated by the flat panel display device.

3. The display apparatus of claim 2, wherein each pixel of the switching panel comprises:

a valid image display region which transmits light corresponding to the viewpoint images during the three-dimensional image display; and

a selective blocking region which surrounds the valid image display region and selectively transmits and blocks light according to an on/off control.

4. The display apparatus of claim 3, wherein a size of the valid image display region can be adjusted.

5. The display apparatus of claim 4, wherein the switching panel is a liquid crystal display which is designed to selectively turn on and off light according to a control signal.

6. The display apparatus of claim 3, wherein the switching panel is a liquid crystal display which is designed to selectively turn on and off light according to a control signal.

7. The display apparatus of claim 2, wherein the switching panel is a liquid crystal display which is designed to selectively turn on and off light according to a control signal.

8. The display apparatus of claim 1, wherein the flat panel display device is one selected from the group consisting of a liquid crystal display, a plasma display panel, a field emission device, and an organic electroluminescence panel.

9. The display apparatus of claim 1, wherein the flat panel display device generates a plurality of viewpoint images arranged in an $n \times n$ matrix in each pixel when the three-dimensional image is generated.

10. The display apparatus of claim 1, wherein at least one of following formulae is satisfied:

$$p_i = p(1 - \frac{d}{V_D}) \text{ and}$$

$$Ep_i = V_w \cdot \frac{d}{V_D},$$

where “p” denotes a pixel pitch of the flat panel display device, p_i denotes a pixel pitch of the switching panel, V_D denotes a watching distance, “d” denotes a distance between the flat panel display device and the switching panel, Ep_i denotes a width of the valid image display region transmitting light on the switching panel during three-dimensional image display, and V_w denotes a width of a visual field.

11. The display apparatus of claim 10, wherein the width Ep_i of the valid image display region transmitting light on the switching panel and the pixel pitch p_i of the switching panel satisfy a relationship expressed by $Ep_i \leq p_i$.

12. The display apparatus of claim 10, wherein when a distance between adjacent visual fields of different viewpoints is denoted by ΔV , an image width ΔEp_i corresponding to the distance ΔV in the valid image display region is given by a following formula:

$$\Delta Ep_i = \Delta V \cdot \frac{d}{V_D}.$$

13. The display apparatus of claim 1, further comprising a visual field expansion unit which expands a visual field in at least one of a vertical direction and a horizontal direction.

14. The display apparatus of claim 13, wherein the visual field expansion unit comprises a first lens plate which expands the visual field in the horizontal direction and a second lens plate which expands the visual field in the vertical direction.

15. A method of selectively displaying a two-dimensional image and a three-dimensional image, the method comprising:

selecting one of two-dimensional image display and three-dimensional image display;

driving a flat panel display device to generate the two-dimensional image or generate a plurality of viewpoint images having different parallaxes in each pixel so as to form the three-dimensional image so that the two-dimensional image or the three-dimensional image is displayed; and

driving a switching panel according to a type of image generated by the flat panel display device such that the switching panel transmits light as it is when the two-dimensional image is generated by the flat panel display device and the switching panel has a structure corresponding to pixel

information of the flat panel display device when the plurality of viewpoint images are generated by the flat panel display device.

16. The method of claim 15, wherein the plurality of viewpoint images are arranged in an $n \times n$ matrix in each pixel.